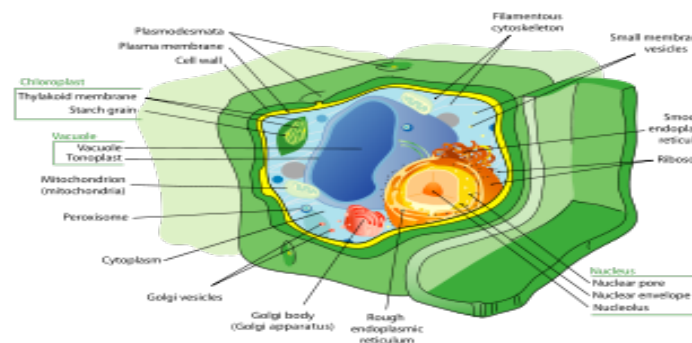


Science Shoebox Activity

Title: Making Cells

Grade 4 Life Science

Content Standard 1 - Cells



Grade Level Expectation: GLE 04071.1 Recognize that cells are the building blocks of all living things.

Checks for Understanding: 0407.1.2 Create a basic model of the cell that illustrates different cell structures and describe their functions.

Performance Indicators State: SPI 04071.1 Compare basic structures of plant and animal cells.

Task Objective: The students will recognize and compare/contrast the basic structures of plant and animal cells.

Materials (General)

Pictures of both a plant and an animal cell with blanks for students to fill in the basic structures of the cells.

Both Plant & Animal Cell – Cookie

Materials (Plant Cell)

Hershey kiss, green M&Ms, icing (two colors), raisins, fruit roll up pieces

Materials (Animal Cell)

Hershey kiss, sprinkles, M&M's, icing (different color than for the plant cell), raisins

Background Knowledge for Teachers:

Cells are the building blocks of life. Both plants and animals are made up of cells, however, there are some differences between them. Plant and animal cells contain similar organelles such as the nucleus, mitochondria, cell membrane, lysosomes, and others. Plant cells also contain chloroplasts and a cell wall.

The cell wall in a plant cell gives the cell its structure. The plasma membrane is similar to a cell wall, but it is not rigid.

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Across the Curriculum

Math: By using the amount of structures that each type of cell contains on your cookies, develop a story problem using multiplication and division. Count the structures on each cell, use those numbers to create your story and number sentences.

GLE 0406.1.5 Use mathematical ideas and processes in different settings to formulate patterns, analyze graphs, set up and solve problems and interpret solutions.

Checks for Understanding: 0406.1.9 Develop a story problem that illustrates a given multiplication or division number sentence.

Social Studies: Have the students look at the cells and their different structures. Have them compare the cells to the different structures it takes to run a city. For example, cities need electricity so the mitochondrion can represent the power plants. Chloroplasts have the same job in plant cells. In the heart of any city is its government so the nucleus would represent that.

Content Standard 4.0 - Governance and Civics

Learning Expectations: 4.01 - Discuss the structure and purposes of government.

Language Arts: The students will compare and contrast the basic structures of animal and plant cells. They will write two paragraphs: one for comparing the structures and one for contrasting the structures.

GLE 0401.3.2 Write in a variety of modes and genres (e.g., narration, description, personal expression, imaginative writing, response to literature, response to subject matter content).

Checks for Understanding 0401.3.6 Compare in writing two persons or things.

References:

- Models for cells can be found on the internet. There are different recipes to make them or you can come up with some ideas of your own, like I did.
- Tennessee State Standards can also be found online.

Wayne's Word Comparison of Plant and Animal Cells

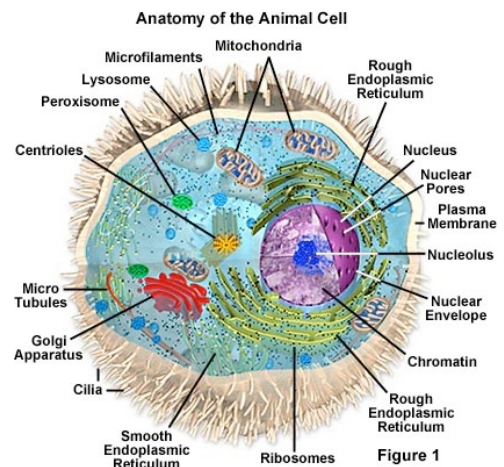
- <http://waynesword.palomar.edu/lmexer1a.htm>

- biology4kids.com (Great website for kids to learn the definitions of the structures of the cells.)

Title: Making Cells

Student Instructions:

1. Take a handout from the stack next to the shoebox.
2. Fill in the blanks on the pictures of the animal and plant cells.
3. On the bottom of the second page of the handout, describe the function of each structure.
4. Take a bag with both a round and a square cookie from the box.
5. Construct an animal and a plant cell with the materials provided based on the pictures you filled in.
 - a. Nucleus = Hershey Kiss
 - b. Ribosomes = Sprinkles
 - c. Chloroplasts = Green M&M Minis
 - d. Lysosomes = M&M's
 - e. Cytoplasm = White Icing
 - f. Cell Membrane = Red Icing
 - g. Cell Wall = Green Icing
 - h. Mitochondria = Raisins
 - i. Central Vacuole = Fruit Roll Up Pieces
5. Fill out the chart to organize which cells contain which structures.



Structures	Animal Cells	Plant Cells
Nucleus		
Cytoplasm		
Ribosomes		
Lysosomes		
Cell Membrane		
Chloroplasts		
Cell Wall		
Mitochondria		
Central Vacuole		

6. Clean up all of the materials and leave the box EXACTLY how you found it.

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